About This Resource

Open School BC’s Youth Explore Trades Skills resource development project involves creating learning resources to support the implementation of the BC Ministry of Education’s Youth Explore Trades Skills Program Guide.

In April 2016 an electronics and robotics resource development planning session took place in Vancouver, BC, among Ministry of Education staff, industry trade professionals and five electronics and robotics teachers. The purpose of the planning session was to articulate key competencies of electronics and robotics professionals, to develop an instructional design plan and to draft a range of Activity Plans for a Youth Explore Trades Skills electronics and robotics module. This was a process that united unique, personalized teaching, professional backgrounds and industry evolutions that have been rapidly evolving organically. This module marks some of the first formal curriculum in this field for the grade 10–12 student body in BC.

These resources have been designed to meet a range of students’ and teachers’ skill levels and learning needs. This module introduces students to essential concepts in electronics and robotics, from beginner to advanced levels.

The Activity Plans are designed to be flexible and customizable, to allow for standalone use or followed in sequence at the teacher’s discretion and comfort level with the material.

The planning team created activities for multi-platform use, depending on the kits available to students, such as FIRST LEGO League, VEX EDR, VEX IQ or VEX Robotics Competition. The activities are sequenced from beginner level to advanced, depending on the knowledge level of both the teacher and the student.

In this resource you will find:

- A description of each activity
- A time estimate to complete each activity
- Assumptions, materials and tools required to complete the activity
- Detailed lesson plans with activities, images and related resources
- Suggestions for demonstrating the activity to the class
- Detailed terminology related to the activity and the robotics field

All Activity Plans are available in both PDF Format and Word formats on the Youth Explore Trades Skills website: http://www.mytrainingbc.ca/skills-exploration/index.html

Levels of Experience

It is anticipated that the students and teachers who engage in these activities will have varying levels of electronics and robotics knowledge. Each activity outlines any prior knowledge or available equipment necessary to complete the activity.
The Activity Plans are arranged into three levels of ability for you to choose from:

- Beginner level: activities 1–8
- Intermediate level: activities 9–11
- Advanced level: activities 12–14

**Assessment**

At the end of each activity there is a suggested assessment table to complete for each student. These may include a combination of self-assessment, peer-assessment and teacher assessment, depending on the learning outcomes and difficulty level of the activity.

Most activities include an assessment table consisting of learning outcomes that are tailored to the activity, as well as common core learning outcomes that include teamwork, error handling and use of key terminology. Each objective is ranked on a six-point scale from exemplary (6) to not attempted (0) or basic (1).

Teachers may use their discretion in evaluating performance based on the needs of their students and module completion criteria (for credit or not-for-credit).

**Stewarding Future Experts**

We hope that this module opens the door for our students to contribute to this vast and rapidly evolving field, and encourages innovative ideas, new applications and unforeseen career paths.

“We make the path by walking it.” By supporting our youth to walk this path of study in electronics and robotics, we enable them to quite literally create it. We hope that teachers accompany their students as they explore this field, using this module as just enough of a framework to allow the messy process of innovation and creativity to expand.

![BCIT students with their completed super cyborg robot masks](image)